

REMARKS

The Office Action of June 18, 2010, and the references cited therein have been carefully considered.

In this Amendment, independent claim 17 has been amended to even more specifically define the differences between the bottom section of the separator according to the invention and that according to the prior art without raising any new issues or requiring any further search, claims 17 and 18 have been amended to overcome the Examiner's formal rejection, and claim 19 has been cancelled.

The rejection of claim 19 under 35 U.S.C 112, first paragraph, has been noted. In view of the cancellation of this claim, this ground of rejection is now moot, and need not be further discussed.

The rejection of claims 17, 18 and 2-5 under 35 U.S.C 112, second paragraph, as being indefinite due to the use of the term "slightly curved" has been noted. In view of the cancellation of the word "slightly" from each of these claims, it is submitted that this ground of rejection has been overcome and should be withdrawn.

Reconsideration of the rejection of claims 17 and 18 under 35 U.S.C 102(b) as being anticipated by the patent to Yamashita et al is respectfully requested.

The present invention as defined in independent claim 17 is directed to an improved cylindrical separator for a cylindrical battery cell. According to claim 17, the cylindrical separator for a cylindrical battery cell according to the invention is of the type comprising a cylindrical body constituted by a layered structure of a plurality of turns of at least a non-woven sheet material, and a bottom part closing a first end of the cylindrical body, and with the bottom part being an integral extension of wound layers of the cylindrical body which is bent over or pressed down to provide a curved shape and fused by heat. Such a basic structural arrangement is well known and is also shown by the Yamashita et al patent. However, claim 17 further recites that the bottom part of the cylindrical body is uniformly and evenly bent along an entire circumferential section to form the curved shape with respective wrinkle-free, continuous inner and outer surfaces

and a substantially uniform thickness. These latter characteristics of the separator according to the invention, which incidentally directly result from the method according to the invention wherein the bending and shaping takes place while the cylinder is rotating, are not taught or made obvious by the disclosure of the Yamashita et al. reference.

In rejecting independent claim 17, the Examiner has stated that Yamashita et al. teaches that the bottom portion 22a of the cylindrical separator is semi-cylindrical and is shown in Fig 5D as having wrinkle-free inner and outer surfaces and being of a uniform thickness. However, it is submitted that the **drawings** of the Yamashita et al patent are **schematic** in nature and do not show the actual separator surfaces. Moreover, there is no discussion or even mention of the wrinkle-free surfaces or uniform thickness of the bottom closure in the Yamashita et al patent. Accordingly, it is submitted that the mere incidental schematic showing of Yamashita et al cannot be considered to be an anticipation of the claimed features with the resulting advantages. Moreover, in view of the manner in which the bottom part of the separator is formed according to Yamashita et al, it is submitted that the bottom part of the Yamashita et al separator would contain wrinkles and would not be of uniform thickness.

According to the Yamashita et al patent, as shown in Figs. 6A-6C and 7 and described in columns 7 and 8, the end of the cylinder is pushed in on one side by a rod-like tool 27 to form the bottom layer 22c (see Fig 6A, 6B and 7). Thereafter, a mold 29 is pressed against the top end of the cylindrical body (see Fig. 6C) to produce the semi-spherical bottom portion 22a. Such a method will inevitably cause wrinkles and results in a non-even thickness as there are parts of the of the bottom where the wall thickness counts twice, while at other edge regions multiple bending is necessary to obtain the desired shape by the special folding indicated in the drawing. Accordingly, for the above stated reasons it is submitted that claim 17 and claim 18 dependent thereon are not anticipated by the Yamashita et al patent.

In addition to the above, claim 17, as now amended, specifically recites that the bottom part is formed by an even and uniform bending around the entire circumference of the cylindrical body. Such is clearly not the case according to Yamashita et al wherein, as indicated above, the bottom portion is formed by initially bending from only one side by the tool 27 and then pressed in the longitudinal direction by the tool 29. Such a method clearly does not result in an even and uniform bending around the entire circumferential section of the cylindrical body as required by claim 17. Therefore, for this additional reason, it is submitted that claim 17 is not anticipated by and is allowable over the Yamashita et al patent under 35 U.S.C 102.

The rejection of claims 2 and 4 under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al in view of Haruhisa et al and Gozdz et al has been noted. Claims 2 and 4 are each dependent on claim 17, and are initially submitted to be allowable over the Yamashita et al reference for at least the same reasons as that claim. In this ground of rejection, the secondary references were cited with regard to the specific materials recited in claims 2 and 4. However, they do not overcome the deficiencies of the Yamashita et al patent as discussed above. Accordingly, it is submitted that claims 2 and 4 are allowable over the cited combination of references for at least the same reasons as claim 17.

The rejection of claim 3 as unpatentable over the Yamashita et al in view of Haruhisa et al. and in further view of Devitt et al has been noted and reconsideration is requested. Claim 3 is dependent on claim 2, which is dependent on claim 17, and thus is allowable over the combination of the Yamashita et al and Haruhisa et al patents for at least the same reasons as claims 17 and 2. In this ground of rejection, the Dewitt et al patent is cited simply to show that it is known to form a separator have one wound layer of a semi-permeable membrane and cellophane. This patent, however, does not overcome the deficiencies of the Yamashita et al and Haruhisa et al combination of references as discussed above with regard to claims 17 and 2. Accordingly, it is submitted that claim 3 is allowable over the cited combination of references for at least the same reasons as claims 17 and 2.

The rejection of claim 5 as unpatentable over the Yamashita et al in view of Haruhisa et al. and in further view of Tomantschger et al. has likewise been noted and reconsideration likewise is requested. In this ground of rejection, the Tomantschger et al. patent is cited simply to show that it is known to include a thermoplastic sealant at the central zone on the outside of the bottom part of a separator to prevent electrical contact between the negative electrode and the cell container. This patent, however, does not overcome the deficiencies of the Yamashita et al-Haruhisa et al combination of references as discussed above with regard to claims 17, from which claim 5 depends. Accordingly, it is submitted that claim 5 is allowable over the cited combination of references for at least the same reasons as claim 17.

In view of the above amendments and for the above stated reasons, it is submitted that each of claims 2-5, 17 and 18 is allowable over the prior art of record and is in condition for allowance. Such action and the passing of this application to issue therefore are respectfully requested.

Respectfully submitted,

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